

Application No.: 10/617,585
Docket No.: FA1048USNA

Remarks/Arguments

Status of the Application

Request for Continued Examination

Applicants note with appreciation that the Request for Continued Examination has been entered, and that a previous anticipation rejection over Yahkind has been withdrawn.

Claims 1-21 and 26-30 are pending in the application pursuant to Applicants' election without traverse in response to the restriction requirement.

Claims 22-25 have been withdrawn in response to a restriction requirement as they relate to non-elected subject matter. These claims have been withdrawn without prejudice to pursuing prosecution of any presently excluded embodiments or subject matter in one or more future continuation or divisional applications.

Claims 2 and 4 are withdrawn per election of species. These claims may be examined in this case once examination and prosecution on the merits of the currently elected species has been completed. In any event, the withdrawal of these claims by Applicants is also without prejudice to the right to pursue prosecution of any presently excluded embodiments or subject matter in this application or in one or more future continuation or divisional applications.

Claims 1, 3, 5-21, and 26-30 are being examined on the merits.

Amendments to the Claims

Claims 1 and 26 are amended to advance the prosecution by more clearly specifying that from 0.01% to 10% by weight of the resulting copolymer can optionally consist of one or both of functional acrylate monomers or the same weight percentage range of non-functional methacrylate monomers. This amendment is fully supported in the specification at page 7, lines 23-32, which state:

"The monomer mixture can also further include small amounts, typically ranging from 0.01% to 10% by weight of functional acrylate monomers provided enough functional methacrylate monomers are present in the monomer mixture to ensure the presence of aforescribed functionalities on each polymer chain. All percentages based on the total weight of the monomer mixture."

"The monomer mixture can also further include small amounts, typically ranging from 0.01% to 10% by weight of non-functional methacrylate monomers,

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for example butyl methacrylate, provided enough functional methacrylate monomers are present in the monomer mixture to ensure the presence of a functionality on each polymer chain."

As amended, claims 1 and 26 require for the copolymer one or more non-functional acrylate monomers and one or more functional methacrylate monomers, while a low concentration of either non-functional acrylates or functional methacrylates is optional (thus, neither, one or both may be present). No new matter is being introduced.

Claim Rejections – 35 U.S.C. § 112

Independent Claims 1, 26 and Their Dependent Claims

Claims 1, 3, 5-21, and 26-30 are rejected under the second paragraph of § 112 as allegedly indefinite. The amendatory language from the paper filed in October 2007 with the Request for Continued Examination has been changed, and Applicants respectfully submit that the amended independent claims 1 and 26, while within the same scope as the previous claims, cure any apparent or potential deficiency in clarity or definiteness. As pointed out above, the copolymer consists of one or more non-functional acrylate monomers and one or more functional methacrylate monomers, and optionally may consist of from 0.01% to 10% by weight of either of functional acrylate monomers and non-functional methacrylate monomers.

Therefore, claim 1 can address: (i) a coating composition comprising crosslinkable and crosslinking components, where the crosslinkable component comprises a copolymer consisting of one or more non-functional acrylate monomers and one or more functional methacrylate monomers; (ii) the same, also consisting of 0.01% to 10% by weight of the total copolymer of (a) functional acrylate monomers or (b) non-functional methacrylate monomers (one or the other, but not both); and (iii) the same, with the same weight percent of total copolymer of both functional acrylate and non-functional methacrylate monomers. Dependent claim 13 states that the copolymer further consists of functional acrylate monomers only (case (ii)(a)), while dependent claim 14 states that the copolymer further consists of non-functional methacrylate monomers only (case (ii)(b)).

The Office Action appears to question the definiteness of including optional components in a set that is "closed" by "consisting of" language. The claimed coating composition includes,

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inter alia, a crosslinkable component that consists of one or more non-functional acrylate and one or more functional methacrylate monomers, where the crosslinkable component may optionally also consist of low percentages of the total crosslinkable component by weight of functional acrylates and/or non-functional methacrylates. Optional components, and ranges of percent by weight composition, even in a "closed" set are permitted, and this kind of claim language is recognized and has been allowed in the past.

The primary reference cited against Applicants in the Office Action, U.S. Patent No. 6,013,739 to Rink et al. contains precisely this kind of claim language. At Col. 18, lines 22-25: component (A) consists of the reaction product obtained by polymerizing 10 to 51% by weight of a mixture comprising * * * and at lines 36-37, a component in that mixture is recited as "0 to 20% by weight" of one or more monomers selected from the group consisting of * * *. There are additional examples throughout the disclosure and the claims. A claim reciting 0 to n % of some component simply states, by alternative means, that that component is optional. Where there is to be 0 to n % by weight of one or more monomers selected from the group consisting of a set of several different monomers, then the ingredient may contain one or more of the recited monomers, in any combination, so that each is optional and the number of possible combinations may be relatively high. It is also understood where there are recited ranges of components, including claims having optional components, that the total percentages of the constituents actually used in each and every permitted iteration must equal 100%, no more and no less. The recitation of ranges of percent by weight of constituents is a long permitted practice in writing chemical claims, and is clearly not indefinite, nor does it lack clarity.

On this basis, Applicants respectfully submit that claims 1 and 26 and their respective dependent claims are clear, definite, adequately supported by the disclosure, and fully in compliance with 35 U.S.C. § 112, second paragraph.

Dependent Claims 28, 30

"Mono" is Clearly and Reasonably Defined

Claims 28 and 30 have also been found deficient in that the term "mono" in "mono-functional" is allegedly indefinite and lacks antecedent basis for the limitations in the claims. The explanation of the term and its application to the claimed embodiments is found on page 6, lines 9-23 of the disclosure:

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"The use of non-functional acrylate monomers and functional methacrylate monomers in the monomer mixture by the polymerization process described below ensures functionality on almost every copolymer chain, with low levels of non-functional chains of preferably less than 1 % and mono-functional polymer chains of preferably less than 5%, even at these low molecular weights, the percentages being based on of the total number of chains. By contrast, using commonly practiced random polymerization techniques; the conventional copolymers at these low molecular weights would typically have unacceptable functionality distribution and contain high levels of undesirable non-functional and mono-functional polymer chains. Generally, the presence of non- functional and mono-functional polymer chains in coating compositions reduces the crosslinking of the crosslinkable functionalities with the crosslinking functionalities and results in poor coating properties, such as low crosslink density, high soluble fraction, low hardness, poor adhesion; and poor chip and humidity resistance."

Accordingly, a mono-functional polymer chain is a chain that has a single crosslinkable group on each chain. Applicants respectfully submit that given the recitation in the disclosure and the presumed knowledge of one skilled in the applicable art or arts, that this term would be fully understood and is therefore clear and definite. Given the explanation in the disclosure, the ordinary meaning of the term, and the knowledge that a reasonably skilled artisan would possess, the term "mono" is clearly and reasonably defined. This rejection should be withdrawn.

Claims 28, 30 Have Reasonable Antecedent Basis

A claim has appropriate antecedent basis if the scope of the claim may be considered definite and clear to one of ordinary skill in the art. In other words, if the scope of the claim is reasonably ascertainable by those skilled in the art, it has a reasonable antecedent basis and is clear and definite. *Ex parte Porter*, 25 USPQ2d 1144 (B.P.A.I. 1992). It is respectfully submitted therefore that the terminology in dependent claims 28 and 30 have adequate and reasonable antecedent basis. Applicants respectfully point out that neither claim 27 nor claim 29 has been found objectionable; these claims both recite "non-functional polymer chains."

Claim Rejections – 35 U.S.C. §102

Rink

Claims 1-3, 5-11, 13-21, 26 are rejected under 35 U.S.C. §102(b) as being anticipated by Rink, et al., U.S. Patent No. 6,013,739. Applicants respectfully traverse this rejection on the

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basis of the foregoing amendments and the remarks presented below. Applicants respectfully reiterate Remarks/Arguments made of record previously in distinguishing Rink from the present claims, and incorporate such Remarks/Arguments by reference herein to obviate the need for repeating them verbatim and in their entirety in this paper.

Rink lists the constituents of the subject coating composition at Col. 2, line 51 to Col. 3, 37. This detailed recitation of the composition is repeated at Col. 3, line 60 to Col. 4, line 41 and in claim 1 (Col. 18, line 17 to Col. 19, line 11). Essential conditions for the component mixture of Rink's invention are given at Col. 5, line 41 to Col. 6, line 17. Binder A comprises (a) from 10 to 51% by weight of a mixture comprising: (a1) one or more hydroxyl containing acrylate or methacrylate monomers, and (a2) one or more different hydroxyl containing acrylate or methacrylate monomers; (b) from 0 to 20% by weight of a hydroxyl containing acrylate or methacrylate ester different from (a) and where there are at least 5 carbon atoms in the alcohol residue and/or the hydroxyl containing ester; (c) from 28 to 85% by weight of an aliphatic or cycloaliphatic ester of acrylic or methacrylic acid different from (a) and (b) containing hydroxyl groups with at least 4 carbon atoms in the alcohol residue, including a mixture of such monomers; (d) 0 to 25% by weight of an aromatic vinyl hydrocarbon different from (a), (b) or (c), including mixtures thereof; (e) 0 to 5% by weight of an ethylenically unsaturated carboxylic acid, or mixture of such acids; and (f) 0 to 20% by weight of an ethylenically unsaturated monomer which is different from (a), (b), (c), (d) or (e) or a mixture thereof, to give a "crosslinkable component" which is a polyacrylate resin, and component B which is the "crosslinking component".

Based upon the foregoing, one or more monomers of (a1) and (a2) are required, as is (c); the other components of the crosslinkable component are optional. Both (a1) and (a2) contain functional acrylate monomers and functional methacrylate monomers. They are functional, i.e., crosslinkable, because they all contain hydroxyl groups. Component (c) also has functional esters of acrylic or methacrylic acid. Accordingly, based upon the fundamental descriptions of the required components, including mixtures, it can be seen that for the composition A, components drawn from (a1), (a2) and (c) are the required constituents. All three groups contain functional acrylates and functional methacrylates. Based upon simple logic, it is simply not

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possible to have a crosslinkable binder composition A that is a copolymer consisting primarily or exclusively of non-functional acrylate monomers and functional methacrylate monomers.

Adding additional components from (b), (d) or (f) in any permitted combination does not cure this fundamental defect in Rink vis-à-vis the present claims because the acrylates and methacrylates in (b) are all functional, and (d) is an aromatic vinyl, not an acrylic or methacrylic material; (e) as an "ethylenically unsaturated carboxylic acid" or a mixture of such carboxylic acids (see Col. 7, lines 1-5 for further description), and though this class of optional compositions, which can be present at up to 5% of the total weight of the binder A, could include acrylic or methacrylic acid, the presence of component (e) with the required components, in any possible iteration, cannot achieve the claimed binder composition. Finally, optional component (f) is an ethylenically unsaturated monomer which is different from (a), (b), (c), (d) and (e), and may include (Col. 7, lines 6-12) amides, nitriles and vinyl ethers of acrylic or methacrylic acid.

Applicants respectfully submit that Rink has been misapplied to the present claims and that Rink cannot and does not anticipate the claims being examined on the merits in this present action.

Claims 1 and 26 are the independent claims, and both recite the requirement that the acrylate monomers be non-functional and the methacrylate monomers functional. The remaining claims pending in the case depend directly or indirectly from claim 1 and further patentably distinguish over the reference. Accordingly, this rejection should be withdrawn and not reapplyed.

Claim Rejection – 35 U.S.C. § 103

Claim 12 was rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over Rink in view of Roesler et al., U.S. 2003/0232942. This rejection is also respectfully traversed. As discussed above, Rink mixes functional acrylates and functional methacrylates. In Rink, all of the acrylates and methacrylates (see claim 1 of Rink) are functional. In Roesler, a hydroxylalkyl (meth)acrylate undergoes an alkoxylation reaction to form a polyether monool [0061]. Neither Rink nor Roesler disclose, teach or suggest a copolymer comprised of non-functional acrylate monomers and functional methacrylate monomers. Nor has anything been cited in the Office Action to suggest knowledge or trends in the field indicating that the combination of these references would lead to the critical limitations cited in claims 1 and 26. Rather, the Office

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Action has focused on the addition of silane functionalities to the monoool polyether by reaction with (i) isocyanatopropyl trimethoxy silane to form an intermediate followed by (ii) reaction with a primary or secondary aminosilane or thiosilane. It is in this second step that Roesler teaches the addition of silane functionalities to the polyether monoool. It is respectfully averred that neither reference, alone or in combination, would have suggested success in designing a coating material comprising a copolymer synthesized of non-functional acrylate monomers and functional methacrylate monomers. Present claim 12 depends directly from claim 1 and embodies all the limitations of claim 1 as well as the additional limitations of claim 12. Claim 12 is directed to providing the copolymer (comprised of non-functional acrylates and functional methacrylates) with silane functionalities by reacting the copolymer formed as per claim 1 with isocyanatopropyl trimethoxy silane, thus eliminating Roesler's second reaction step. Applicants respectfully submit that Applicants' elimination of the second step is an indication of non-obviousness in and of itself and that, in any event, claim 12 should be considered patentable depending, as Applicants respectfully submit, from a base claim that is both novel and non-obvious. For these reasons, Applicants respectfully request that this rejection be withdrawn and not reapplied.

Response to Arguments

Applicants respectfully suggest that they have addressed each point raised in the Response to Arguments section of the Office Action except for that where the Action states, on page 7 thereof, that the "examiner has a reasonable basis to interpret the range as '0.01 to 50% by weight'." This suggestion is respectfully traversed. As pointed out above, and as demonstrated at least by Rink, the primary reference cited against, and maintained against, the present claims, this interpretation is incorrect and logically applied. Rink, as demonstrated above, has components that may be present, at 0 to 20 % by weight of the binder, alone or in combination. This cannot be construed to mean that any percentage by weight other than that recited is intended or can be logically inferred, regardless of whether one, two, or four possible monomers are used alone or combined in some fashion to make that particular constituent.

The weight percent range of 0.01% to 10% with respect to functional acrylates and non-functional methacrylates means that if either is present (present as one or more monomers of each) than each can be no more than 10% by weight of the total binder (crosslinkable)

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composition. Applicants respectfully aver that this interpretation is fair, reasonable, and fully supported by the disclosure.

Conclusion

In view of the foregoing, allowance of the above-referenced application is respectfully requested.

Respectfully submitted,


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